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EXAMINER	
WU, JIANYE	

ART UNIT	PAPER NUMBER
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/613,629	SRINIVASAN ET AL.	
	Examiner	Art Unit	
	Jianye Wu	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07/02/2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/11/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the Information Disclosure Statement filed on 12/11/2006 have been considered by the examiner (see attached PTO-1449 form or TPO/SB/08A and 08B forms).

Drawings Objections

2. The drawings are objected to because of the problems addressed in the "Notice of Draftperson's Patent Drawing Review" (PTO-948 form). Correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claim 1, 9-10, 22-26** and **31-32** are rejected under 35 U.S.C. 102(b) as being anticipated by Blake et al, "An Architecture for Differentiated Services", RFC 2475, December, 1998, herein after being referenced as Blake et al.

Regarding **Claim 1**, Blake et al discloses a traffic management processor (Figure 1, page 16) for processing a plurality of different traffic flows, each traffic flow including any number of packets each including a flow ID (DS codepoint in page 4) indicating to which traffic flow the packet belongs, comprising:

means for tracking each packet (Classifier in Figure 1, page 16) according to its flow ID (DS codepoint in page 4); and

means for scheduling each packet (Traffic conditioner, Page 7, in view of Figure 1 in Page 16) according to its flow ID ID (DS codepoint in page 4).

Regarding **claim 9**, Blake et al discloses the traffic management processor of Claim 1 (as applied to claim 1 above), further comprising: means for (Traffic conditioner, page 7) independently policing each of the traffic flows.

Regarding **claim 10**, Blake et al discloses the traffic management processor of Claim 9 (as applied to claim 9 above), wherein the means for independently policing comprises:

a parameter table (traffic profiles, Page 15), having a plurality of rows each for storing one or more flow parameters (traffic profiles, first paragraph of Section 2.3.2, Page 15) for a queued packet; and

policing logic (Traffic conditioner, page 7) coupled to the parameter table (traffic profiles, first paragraph of Section 2.3.2, Page 15), the policing logic (Marker, Page 5) for generating a packet accept flag (Marking, Page 5), for an incoming packet in response to one or more flow parameters corresponding to a queued packet that has the same flow ID (DS codepoint in page 4) as the incoming packet (3rd paragraph of Section 2.3.2 in Page 15, where accept flag is equivalent to "in-profile").

Regarding **claim 22**, Blake et al discloses a method for processing a number of traffic flows (Fig 1, Page 16), each including one or more packets, comprising:

receiving an incoming packet (the input to Classifier in Fig 1, Page 16);

determining which traffic flow the incoming packet belongs to (Classifier in Fig 1, Page 16); and

scheduling the incoming packet for departure according to which traffic flow the packet belongs (Meter and marker in Fig 1, Page 16).

Regarding **claim 23**, Blake et al discloses the method of Claim 22 (as applied to claim 22), wherein the incoming packet includes an ID (DS codepoint, 3rd bullet in page 3, or page 4), indicating to which traffic flow the incoming packet belongs.

Regarding **claim 24**, Blake et al discloses the method of Claim 23 (as applied to claim 23), wherein the determining comprises:

comparing the flow ID of the incoming packet with the flow of previously queued packets (Classifier in Fig 1, Page 16 and Section 2.3.1, page 14); and

selectively asserting a match flag in response to the comparing ("receive a differentiated service" in Second paragraph, Section 2.3, page 14).

Regarding **claim 25**, Blake et al discloses the method of Claim 24 (as applied to claim 24), wherein the scheduling comprises:

calculating a departure time for the incoming packet relative to the departure time of a previously received packet of the same traffic flow (Meter and Shaper in Fig 1, Page 16 and Section 2.3.3.1, page 16) if the match flag is asserted ("in-profile", Section 2.3.3.1, page 16); and

calculating a departure time for the incoming packet relative to the packet's arrival time (Meter in Fig 1, Page 16 and Section 2.3.3.1, page 16) if the match flag is not asserted ("out-of-profile", and Section 2.3.3.1, page 16).

Regarding **claim 26**, Blake et al discloses the method of Claim 25 (as applied in Claim 25), wherein the scheduling further comprises:

comparing the departure times of the packets with each other to determine which departure time is the earliest (Shaping, Page 7); and

transmitting the packet that has the earliest departure time (Shaping, Page 7, and shaper in Figure 1 in Page 16).

Regarding **claim 31**, Blake et al discloses the method of Claim 22 (as applied to claim 22), further comprising policing the incoming packet (Shaper/Droper in Fig. 1, page 16) for acceptance according to which traffic flow the packet belongs.

Regarding **claim 32**, Blake et al discloses the method of Claim 31 (as applied to claim 31), wherein each traffic flow is independently policed using a leaky bucket technique (token bucket meter, Section 2.3.2, Page 15).

5. Claim **12-21** are rejected under 35 U.S.C. 102(b) as being anticipated by Ohgane et al, "Communication Control Device and Method for use in an ATM System Operable in an ABR Mode", Feb. 23, 1999.

Regarding **claim 12**, Ohgane et al discloses a traffic management processor (FIG. 1) for managing a number of traffic flows each including one or more packets, comprising:

a CAM device (27 of FIG. 1) having a plurality of rows, each row (FIG.6, and last paragraph of Col 8) storing a flow ID (VC, last paragraph of Col 8) for a corresponding packet, the flow ID indicating to which traffic flow the packet belongs;

a departure time table (511, FIG. 4) including a plurality of rows, each coupled to a corresponding row of the CAM device (27 of FIG. 1) and configured to store a departure time for the corresponding packet; and

compare logic (512, 515, and 516 of FIG. 4, and second paragraph of Col. 8) having inputs coupled to corresponding rows the departure time table, the compare logic for comparing the departure times (3rd paragraph of Col. 8) with each other to determine which departure time is the earliest.

Regarding **claim 13**, Ohgane et al discloses the traffic management processor of Claim 12 (as applied in Claim 12 above), further comprising a priority encoder coupled to the compare logic, the priority encoder (514 combined with 512, 515, and 516 in FIG. 4) generating an address of the row in the departure time table that contains the earliest departure time;

Regarding **claim 14**, Ohgane et al discloses the traffic management processor of Claim 13 (as applied in Claim 13 above), wherein each row of the CAM device includes a most recently received bit (cell_sent flag, last paragraph of Col. 8) indicates whether the corresponding packet is the most recently received packet for its traffic flow.

Regarding **claim 15**, Ohgane et al discloses the traffic management processor of Claim 14 (as applied in Claim 14 above), wherein priority encoder

14 (Priority Encoder 514 combined with 511, 512, 513, 515, 516 in FIG. 4) is configured to generate a next free address in the CAM device in response to the most-recently received bits.

Regarding **claim 16**, Ohgane et al discloses the traffic management processor of Claim 12 (as applied in Claim 12 above), wherein the CAM device is configured to compare a flow ID received for an incoming packet with the flow ID's stored in the CAM device (last paragraph of Col. 8).

Regarding **claim 17**, Ohgane et al discloses the traffic management processor of Claim 16 (as applied in Claim 16 above), further comprising:

match logic having a plurality of inputs, each coupled to a corresponding row of the CAM device, the match logic generating a match flag in response to match conditions in the CAM device; and

a DTC circuit (Transmission Time Deriving Section, 34 of FIG. 2) having an input receive the match flag (in control memory 27, via 30, 35, and 36 in FIG. 2, the last paragraph of Col. 6).

Regarding **claim 18**, Ohgane et al discloses the traffic management processor of Claim 17 (as applied in Claim 17 above), wherein DTC circuit calculates a departure time (3rd paragraph of Col. 7) for the incoming packet relative to the departure time of a previously received of the same traffic flow if the match flag is asserted.

Regarding **claim 19**, Ohgane et al discloses the traffic management processor of Claim 15 (as applied in Claim 17 above), wherein the DTC circuit

calculates a departure time (3rd paragraph of Col. 7) for the incoming packet relative to the packet's arrival time if the match flag is not asserted.

Regarding **claim 20**, Ohgane et al discloses the traffic management processor of Claim 12 (as applied in Claim 12 above), further comprising:

a parameter table (FIG. 6) having a plurality of rows, each coupled corresponding rows of the CAM device and the departure time table (511, FIG. 4), each row of the parameter table for storing one or more flow parameters for a corresponding queued packet; and

policing logic (514 and 511, 512, 513, 515, 516 of FIG. 4) coupled to the parameter table, the policing logic determining whether to accept or reject an incoming packet in response to one or more flow parameters selectively provided by the parameter table.

Regarding **claim 21**, Ohgane et al discloses the traffic management processor of Claim 18 (as applied in Claim 18 above), wherein the policing logic comprises:

means for accessing (254 of FIG 1, and the last paragraph in Col. 8) a packet size parameter for the incoming packet;

means for (254 of FIG 1, and the last paragraph in Col. 8) accessing one or more flow parameters from the table for the previously received packet of the same traffic flow;

means for (254 of FIG 1, and the last paragraph in Col. 8) calculating a bucket size parameter using the one

or more flow parameters; and

means for (254 of FIG 1, and the last paragraph in Col. 8) comparing the bucket size parameter with the packet size parameter to generate a packet accept flag for the incoming packet.

Claim Rejections – 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

> 1. Determining the scope and contents of the prior art.
> 2. Ascertaining the differences between the prior art and the claims at issue.
> 3. Resolving the level of ordinary skill in the pertinent art.
> 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. **Claim 2-8, 27-30** and **33-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Blake et al, "An Architecture for Differentiated Services", RFC 2475, December, 1998 in view of Ohgane et al, "Communication Control Device and Method for use in an ATM System Operable in an ABR Mode", Feb. 23, 1999.

Regarding **claim 2**, the traffic management processor of Claim 1, wherein the means for tracking comprises: a CAM device having a plurality of rows, each for storing the flow ID for a corresponding packet.

Blake et al discloses everything in Claim 1 (as applied to Claim 1), but fails to explicitly disclosure CAM.

Ohgane et al disclosures a memory device (27 of FIG.1) having a plurality of row (FIG. 6, one row per VC).

The memory device can be implemented in CAM, which is often used in network devices to improve performance. In addition, implementing methods/algorithms in hardware memory devices (such as CAM) is conventional in the art and this examiner takes Office Notice of this notion. The advantages of this include great improvement of performance and reliability.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Blake et al with Ohgane et al to produce a system implementing methods taught by Blake with memory devices disclosed by Ohgane et al because of the performance improvement and reliability.

Regarding **claim 3**, Blake et al and Ohgane et al disclose the traffic management processor of Claim 2 (as applied to Claim 2), Ohgane et al further discloses that the CAM device holds the most recently received packet (information of the packet is stored in control memory 27, the last paragraph of Column 8) for its traffic flow (VC, the last paragraph of Col. 8).

Regarding **claim 4**, Blake et al and Ohgane et al disclose the traffic management processor of Claim 2 (as applied to Claim 2), Blake et al further discloses using the flow ID of an incoming packet as flow Ids (DS codepoint, 3rd bullet in page 3, or page 4).

Regarding **claim 5**, Blake et al and Ohgane et al disclose the traffic management processor of Claim 4 (as applied to Claim 4), Ohgane et al further discloses means for calculating a departure time (Transmission Time Deriving Section, 34 of FIG. 2) for the incoming packet.

Regarding **claim 6,** Blake et al and Ohgane et al disclose the traffic management processor of Claim 5 (as applied to Claim 5); Ohgane et al further discloses wherein the means for scheduling comprises:

a DTC circuit for generating the departure times (Transmission Time Deriving Section, 34 of FIG. 2); and

a departure time prioritizer (Priority Encoder 514 and 511, 512, 513, 515, 516 of FIG. 4) coupled to the DTC circuit and for determining which of the departure times is the earliest.

Regarding **claim 7**, Blake et al and Ohgane et al disclose the traffic management processor of Claim 6 (as applied to Claim 6), Ohgane et al further discloses wherein the departure time prioritizer comprises:

a table having a plurality of rows (511 of Fig. 4), each for storing the departure time for a corresponding packet; and

compare logic (combination of 512-516 in FIG. 4) coupled to the table, the compare logic configured to compare the departure times with each other to determine which row contains the earliest departure time (FIG. 5, the packet with the earliest departure time is sent).

Regarding **claim 8**, Blake et al and Ohgane et al disclose the traffic management processor of Claim 7 (as applied in Claim 7), further comprising:

a priority encoder (512 in FIG. 4) coupled to the compare logic, the priority encoder generating an address of the row in the table (511 of FIG. 4) contains the earliest departure time.

Regarding **claim 27**, Blake et al discloses the method of Claim 22 (as applied in Claim 22), but does not explicitly disclose storing the "most recently received bit" that is related to each packet.

Ohgane et al disclose storing a most recently received bit (cell_sent flag, last paragraph of Col. 8) for each packet.

Implementing methods/algorithms in hardware memory devices (such as CAM) is conventional in the art and this examiner takes Office Notice of this notion. The advantages of this include great improvement of performance and reliability.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Blake et al with Ohgane et al to produce a system implementing methods taught by Blake with memory devices disclosed by Ohgane et al because of the performance improvement and reliability.

Regarding **claim 28**, Blake et al and Ohgane et al disclose the method of Claim 27 (as applied in Claim 27); Ohgane et al disclose further discloses:

asserting the most-recently received bit (cell_sent flag, GIG 5) for the incoming packet; and

de-asserting the most-recently received bit (cell_sent flag, FIG 5) of a previously received packet of the same traffic flow as the incoming packet.

Regarding **claim 29**, Blake et al and Ohgane et al disclose the method of Claim 27 (as applied in Claim 27); , Ohgane et al discloses further discloses:

storing the departure times for all packets together in a departure time table (511 of FIG. 4).

Regarding **claim 30**, Blake et al and Ohgane et al disclose the method of Claim 29 (as applied in Claim 27); Ohgane et al further discloses selectively deleting entries (retrieving mode operation, 4th paragraph of Col. 8) from the table in response to the most recently received bit.

8. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Blake et al, "An Architecture for Differentiated Services", RFC 2475, December, 1998 in view of Heinanen et al, "A Single Rate Three Color Marker", RFC2697, September, 1999.

Regarding **claim 11**, Blake et al discloses the traffic management processor of Claim 10 (as applied to claim 10 above), wherein the policing logic comprises:

means for accessing the one or more flow parameters (traffic profile, Page 8) from the parameter table (traffic profile, first paragraph of Section 2.3.2, Page 15) for queued packet that has the same flow ID as the incoming packet (traffic processor defined in Fig. 1, Page 16);

means for calculating a bucket size parameter using the one or more flow parameters (Traffic conditioner, Page 7, policing traffic flow using parameters defined in traffic profile); and

Blake et al fails to explicitly disclose packet size parameter and the comparison of the bucket size parameter with the packet size parameter to generate the packet accept flag.

Heinanen et al discloses packet size parameter (Packet size B, 3rd paragraph, Page 3) and the comparison of the bucket size parameter with the packet size parameter to generate the packet accept flag (color of a packet, 2nd paragraph from bottom, Page 3).

Blake et al is explicitly cited as one of the references (Last reference in Page 6) in Heinanen et al because Heinanen et al is written under the framework taught by Blake et al for easy implementation.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Blake et al with Heinanen et al because Heinanen et al is written under the framework taught by Blake et al for easy implementation.

Regarding **claim 33**, Blake et al discloses the method of Claim 31(as applied in Claim 31), wherein the policing comprises accessing a bucket size parameter for the incoming packet's traffic flow; it fails to disclose accessing a packet size parameter and comparing the bucket size parameter to the packet size parameter;

Heinanen discloses accessing a packet size parameter (Packet size B, Page 3) and comparing the bucket size parameter to the packet size parameter (Last 3 paragraphs in Page 3);

Blake et al is explicitly cited as one of the references (Last reference in Page 6) in Heinanen et al because Heinanen et al is written under the framework taught by Blake et al for easy implementation.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Blake et al with Heinanen et al because Heinanen et al is written under the framework taught by Blake et al for easy implementation.

Regarding **claim 34**, Blake et al and Heinanen et al disclose the method of Claim 33 (as applied in Claim 31 above); Heinanen et al further discloses decreasing the bucket size parameter by an amount of the packet size parameter if the incoming packet is accepted (Last 3 paragraphs in Page 3).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianye Wu whose telephone number is (571)270-1665. The examiner can normally be reached on Monday to Friday, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

3/2/07

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